

Report on Maple Products*

During the past several years there has been a continuous build-up of problems inherent to maple products that deserve the attention of the Association. First, there is a need for a re-evaluation of the methods of analysis of maple products (*Official*

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Methods of Analysis, 9th Ed., 1960, par. 29.132–29.158), and the development of new or modified methods that take cognizance of the changes in maple products resulting from technological changes in the industry. Secondly, there is a need for a means by which pure maple sirup can be detected and measured, either in blended (cane-maple) or in “pure” maple sirup. Thirdly, methods are required by which a

count of microorganisms growing in maple sirup can be obtained and which will measure the extent of the damage caused by their growth so that the economic losses caused by the organisms can be controlled or eliminated.

Three new Associate Referees have been appointed to conduct the extensive studies required in these investigations. George Vallieres, Associate Referee on Analytical Constants, brings with him a wealth of information, since he is head of the Maple and Honey Laboratory of the Quebec Department of Agriculture, where hundreds of maple sirup samples are analyzed annually. He has completed a review of his topic and recommends (1) that further collaborative studies be made on the conductivity value determination; (2) that the range of limits for potassium and phosphorus determinations in pure maple sirup be established; (3) that the malic acid determination be investigated as a criteria of purity of maple sirups. The Referee concurs in these recommendations.

J. Clyde Underwood, Associate Referee on Methods of Analysis of Maple Flavor, is the leader of the U.S. Department of Agriculture's project on the chemistry of maple flavor and has been successful in making important contributions in this field. He has submitted the following report:

"Current investigations on the flavor of maple sirup, using chromatography to isolate pure compounds and modern instrumentation to measure their physical properties, have resulted in the identification of vanillin and syringaldehyde in maple sirup (*J. Food Sci.*, **26**, 288 (1961)). To accomplish this, chloroform extractions of a distinctively flavored maple sirup were made to separate the flavor compounds from the sugars and the colorant of the sirup. The chloroform isolate was subdivided by successively extracting it with water solutions of NaHSO_3 , HCl , and NaOH . These different fractions were chromatographed on silicic acid columns; a number of compounds of varying purity were separated, two of which have proved to be syringaldehyde and vanillin. The other isolated compounds

are being further purified for subsequent identification.

"These two phenols present in maple flavor isolate have been found in oxidized lignins extracted from various woody tissues. Since it has been reported that the maple tree contains lignin of the syringyl type, the possibility that a ligneous material in the sap might be a precursor of maple flavor is now under investigation. A chloroform extract of large amounts of maple sap gives positive reactions for lignin with the various reagents. Work on the flavor components of maple sirup and their origin is continuing, and methods will be developed for the detection of those flavor components which are peculiar to maple sirup."

Aaron Wasserman, Associate Referee on the Microbiology of Maple Sirup, is leader of the U.S. Department of Agriculture's project on the fermentation products of maple sirup and has been responsible for a number of important contributions. His report is published in this issue of *The Journal*. He has recommended that collaborative studies be conducted on his method for counting microorganisms in maple sirup. The Referee concurs.

Recommendations¹

It is recommended—

(1) That collaborative studies be made on the determination of the conductivity values for maple sirup.

(2) That collaborative studies be conducted on the determination of potassium in maple sirup.

(3) That collaborative studies be conducted on the determination of phosphorus in maple sirup.

(4) That analytical methods be developed for the determination of syringaldehyde (flavor component) in maple sirup.

(5) That collaborative studies be conducted on the Associate Referee's method for counting microorganisms in maple sirup.

(6) That the use of the USDA color comparator for classifying maple sirup be made official, since no criticisms or other comments have been received.

¹ These recommendations were approved by Subcommittee D and were adopted by the Association. See *This Journal*, **45**, 129 (1962).